

CLAIMS

Sub A17

5

1. A subscriber telephone system comprising:
a first driver circuit coupled to a tip terminal;
a second driver circuit coupled to a ring terminal;
a network coupled between the second driver circuit and the ring terminal,
the network including a capacitor and a diode limiter coupled in parallel between an output
of the second driver circuit and the ring terminal, and structured to minimize the overall
ring voltage while maintaining a desired battery mean value.

10

2. The subscriber telephone system according to claim 1, wherein said
diode limiter comprises a MOS transistor.

3. The subscriber telephone system according to claim 1, further
comprising an external filter coupled to the tip and ring terminals and structured to extract a
sinusoidal ringer signal.

15

4. A subscriber telephone circuit including a voltage shifting network
coupled between an output driver and a ring terminal, the voltage shifting network
comprising:

a diode having a first terminal coupled to the output driver and a second
terminal coupled to the ring terminal; and

20

a capacitor having a first terminal coupled to the output driver and a second
terminal coupled to the ring terminal.

5. The subscriber telephone circuit of claim 4 further comprising:
a resistance coupled between the second terminal of the diode and a supplied
voltage.

25

6. The subscriber telephone circuit of claim 5 wherein the supplied
voltage is a negative voltage.

7. The subscriber telephone circuit of claim 5 further comprising a second diode coupled between the supplied voltage and the resistance.

8. The subscriber telephone circuit of claim 4 wherein the diode is formed by an MOS transistor.

5 9. The subscriber telephone circuit of claim 8 wherein the MOS transistor has a gate electrode coupled to a switch controller.

10 10. The subscriber telephone circuit of claim 8 wherein the MOS transistor is PMOS.

11. A subscriber telephone circuit including a voltage shifting network, the subscriber telephone circuit comprising:

a first SLIC driver coupled to a ring terminal;

a second SLIC driver coupled to a tip terminal;

a first ringing driver coupled to a first inductive-capacitive network and to the ring terminal; and

15 a second ringing driver coupled to a second inductive-capacitive network and to the tip terminal.

20 12. The subscriber telephone circuit of claim 11 wherein the first ringing driver is coupled through a first inductor to the ring terminal.

13. The subscriber telephone circuit of claim 12 wherein the ring terminal is coupled through a capacitor to a ground reference voltage.

25 14. The subscriber telephone circuit of claim 11 wherein the first ringing driver and the second ringing driver are structured to only be active during a ringing function, and are controlled by a level driver interface that is structured to receive a driving signal.

15 The subscriber telephone circuit of claim 14 wherein the driving signal is a pulse width modulation signal.

16. A method of minimizing an overall voltage during a ringing function of a subscriber telephone circuit provided with a mean battery voltage, the method
5 comprising:

applying a tip ringing signal to a tip terminal;
applying a ring ringing signal to a first terminal of a network;
attenuating the ring ringing signal through a capacitive network; and
applying the attenuated ring ringing signal to a ring terminal.

10 17. The method of claim 16 further comprising;
coupling the attenuated ring ringing signal through a resistive network to a negative battery voltage.

18. The method of claim 16 wherein attenuating the ring ringing signal through a capacitive network comprises modifying the ring ringing signal through an
15 inductive-capacitive network.

add #17